

REMARKS

Applicants have now had an opportunity to carefully consider the comments set forth in the Office Action of July 1, 2004. The recognition of allowable subject matter in **claims 3-6, 12, 13, 15, 18 and 20** is noted with appreciation. Nevertheless, in light of the amendments and remarks submitted herewith, reexamination and reconsideration are respectfully requested.

Additionally, it is noted that section 1 of the Detailed Action indicates that the Examiner has considered the Information Disclosure Statement submitted on October 30, 2000. However, the Detailed Action does not acknowledge the Information Disclosure Statement filed on October 20, 2003 and received in Technology Center 2600 on October 27, 2003 or the Information Disclosure Statement filed on March 3, 2004 and received in Technology Center 2600 on March 11, 2004. Nevertheless, it is noted that the Office Action includes initialed copies of the relevant portions of these submissions, indicating that the Examiner has indeed considered them. These remarks are made, simply to clarify the record.

The Office Action

In the Office Action mailed July 1, 2004:

the specification was objected to for including informalities;

claims 1 and 20 were objected to for including informalities;

claims 1, 7-9, 14-17 and 19 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,153,576 to Harrington ("Harrington");

claim 2 was rejected under 35 U.S.C. §103(a) as being unpatentable over Harrington in view of U.S. Patent No. 4,458,002 to Janssens et al. ("Janssens"); and

claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Harrington in view of Janssens and further in view of U.S. Patent No. 6,445,465 to Samworth ("Samworth").

The Present Application

By way of brief review, the present application is directed towards systems and methods for rendering multicolor images with single colorant (e.g., black and white) rendering devices. A continuously variable screening tool is used to generate a unique texture pattern for every color in a multicolor image. The screening tool is continuous in the sense that there is a different screen pattern for every measurable

or calculable hue and chromaticity in an image (page 6, lines 9-11). The continuously variable screening tool allows a single colorant version of the image to be generated with less information loss than typically suffered in multicolor to single color transformation processes. For example, the continuously variable screening tool is generated by blending patterns from a set of reference screens. The reference screens are associated with selected reference colors in, for example, a machine independent color space. A calculated screen, for an arbitrary color, is generated through a weighted blend of reference screens located near the arbitrary color in the machine independent color space. Typically, the weights depend on the distance of the arbitrary color from each of the reference colors (Abstract).

The Cited References

The primary reference of the Office Action to Harrington discloses mapping color images to black and white textured images. The method includes determining, on a pixel by pixel basis, the amount of a plurality of color components in a color image. Each color component is applied to its own half toned screen, each screen being comprised of a plurality of cells. Certain cell areas of each screen are allocated to a single color component to yield texture patterns. The half tone screens of the color components are combined to yield a black and white textured image (Abstract). Harrington asserts that when one uses the method of Harrington, as one moves around the circle of saturated colors, there is a continuous variation of patterns. Likewise, as one varies saturation and lightness in the color model, a continuous variation of patterns is encountered (column 4, lines 36-40).

However, it is respectfully submitted that Harrington does not disclose or suggest generating a continuously variable screening tool, as in the present application. For example, Harrington discloses a set of half tone screens including a red screen, green screen and blue screen. This set of screens is used for all input colors and does not vary (or continuously vary) so that a different screen is used for every color. Additionally, it is respectfully submitted that the system of Harrington does not provide a different pattern for every different input color.

For example, the blue screen (FIG. 1C) includes only four positions for encoding only five levels of blue (0, 1/5, 2/5, 3/5 and 4/5). It is respectfully submitted that in most color image processing systems at least 256 blue densities are possible. It is further submitted that Harrington encodes 256 levels of blue with

only five different patterns or textures. Therefore, the method of Harrington does not provide a unique pattern for every possible color. Similar arguments are submitted with regard to the 33 density levels provided by the green screen (FIG. 1B) and the 13 levels provided by the red screen (FIG. 1A) of the embodiment disclosed by Harrington.

Janssens allegedly discloses a method and materials for improving the color balance of photographic multicolor images using a contact screen. The process is for the production of a multicolor reversal image. The method includes directing incident image light, dot or line wise modulated by a light disturbing means onto a multicolor photographic silver halide emulsion material containing a blue, green and red sensitive, silver halide emulsion layer and processing the silver halide emulsion layers to form a color reversal image (Abstract). It is respectfully submitted that Janssens is unconcerned with rendering an image described in a multi-colorant color space in a single-colorant color space. As such, Janssens is non-analogous art.

Samworth allegedly discloses a method of producing a half tone screen having a plurality of half tone dots arrayed along a desired screen frequency. The method comprises: a) using variable size half tone dots arrayed along the screen frequency to reproduce shades of gray equal to and above a predetermined shade of gray, the predetermined shade of gray having a first dot size; and b) reproducing shades of gray below the predetermined shade of gray using the first half tone dot size arrayed along the screen frequency by deleting a number of half tone dots per unit area to obtain gray shades below the predetermined shade of gray. It is respectfully submitted that Samworth is unconcerned with rendering color images with a single colorant. Therefore, it is further submitted that Samworth is non-analogous art.

The Objection to the Specification Should be Removed

Section 2 of the detailed action asserts that the abstract of the disclosure is objected to. However, in explaining the objection, the Office Action asserts that at page 4, lines 23-27, the sentences starting with "FIG. 8" and "FIG. 9" should be separate paragraphs. Therefore, the Applicants assume that the reference to the abstract was accidental. Page 4, lines 23-27 have been amended as requested by the Office Action. Therefore, withdrawal of the objection to the specification is

respectfully requested.

The Objections to the Claims Should be Removed

Claims 1 and 20 were objected to for including informalities. With regard to **claim 1**, the Office Action asserts that the phrase --in a single-colorant color space-- should read --to a single-colorant color space--. Instead, punctuation in **claim 1** has been amended for clarity. Reconsideration and withdrawal of the objection are respectfully requested.

With regard to **claim 20**, the Office Action points out that **claim 20** was improperly dependent upon itself. **Claim 20** has been amended as suggested by the Office Action to depend from **claim 19**. For the foregoing reasons, withdrawal of the objection to **claim 20** is respectfully requested.

The Claims are Not Anticipated

Claims 1, 7-9, 14-17 and 19 were rejected under 35 U.S.C. §102(b) as being anticipated by Harrington. In explaining the rejection of **claim 1** the Office Action appears to mean to assert that Harrington teaches that as one moves around the circle of saturated colors, there is a continuous variation of patterns. In this regard, the Office Action directs the attention of the Applicants to column 4, lines 35-40 and FIG. 3 of Harrington. Additionally, the Office Action asserts that the referenced subject matter reads on generating a continuously variable screening tool operative to provide a texture corresponding to each hue and saturation in the multi-colorant color space. However, as explained above, while Harrington uses the phrase --continuous variation--, Harrington does not define the phrase to mean a different texture or pattern for every color in a multi-colorant color space. Furthermore, it is respectfully submitted that a disclosure of a continuous variation of patterns is not a disclosure of a continuously varying screening tool. It is further submitted that the screens of Harrington are static and are not continuously varying. Harrington uses the same screens (e.g., FIG. 1A - FIG. 1C) for all colors. This is in contrast to the continuously varying screening tool which uses or generates a different screen for each color (See FIGS. 4-9 and page 6, line 32 - page 15, line 11 of the present application). Similar arguments are submitted with regard to the assertion of the Office Action that disclosure in Harrington reads on transforming the multi-colorant description of the image based on the continuously variable screening tool.

For at least the foregoing reasons, **claim 1**, as well as **claims 2-13**, which depend therefrom, are not anticipated by Harrington.

With regard to independent **claim 14**, the Office Action asserts that Harrington discloses an applying means which applies the color component to its own half tone screen to yield a black and white textured image and asserts that this reads on a continuously variable screening tool generator operative to generate a different screen texture for every hue and saturation in the multicolor image. However, **claim 14** has been amended to correct an apparent typographical error. **Claim 14** now recites a continuously variable screening tool generator operative to generate a different texture screen for every hue and saturation in the multicolor image. As explained above, Harrington does not disclose a continuously variable screening tool operative to generate a different texture screen for every hue and saturation in the multicolor image. Instead, Harrington discloses a single set (of three screens) which are used to transform colors to black and white textures. Additionally, as explained above, Harrington does not disclose a different pattern or texture for every color.

For at least the foregoing reasons, **claim 14**, as well as **claims 15-18**, which depend therefrom, is not anticipated by Harrington.

In explaining the rejection of **claim 19**, the Office Action asserts that Harrington discloses subject matter which reads on a continuously variable screening tool generator operative to generate a different screen texture for every hue and saturation in the multicolor image. However, as explained above, Harrington does not disclose generating a different screen texture for every hue and saturation in the multicolor image. Instead, Harrington discloses different screen textures for some ranges of hue and saturation in a multicolor image. For example, the embodiment disclosed by Harrington provides five different patterns for all the possible intensity levels of blue, 33 different patterns for all of the possible intensity levels of green and 13 different patterns for all the possible intensity levels of red.

Additionally, correcting amendments have been made to **claim 19**. **Claim 19** now recites a continuously variable screening tool generator operative to generate a different screen for every hue and saturation in the multicolor image and an image transformer operative to apply the different generated screens in transforming the multicolor image to generate a single colorant version of the image. As explained above, Harrington discloses a static screen or set of screens (e.g., FIG. 1A - FIG.

1C) and does not disclose or suggest generating a different screen for every hue and saturation in the multicolor image, as in the subject application.

For at least the foregoing reasons, **claim 19** as well as **claim 20**, which depends therefrom, is unanticipated by Harrington.

The Claims are Not Obvious

Claim 2 was rejected under 35 U.S.C. §103(a) as being unpatentable over Harrington in view of Janssens. However, as explained above, Janssens is concerned with production of a multicolor reversal image with improved color balance and is unrelated to rendering single colorant or black and white versions of color images. One concerned with rendering black and white versions of color images would not look to Janssens and Janssens is non-analogous art.

Additionally, in explaining the rejection of **claim 2**, the Office Action stipulates that Harrington fails to teach defining a neutral screen associated with neutral color and relies on Janssens, column 2, lines 59-60 for this disclosure. However, column 2, lines 56-60 read as follows: "Further, it has been established experimentally by us that the exposure of a multicolor reversal processable silver halide emulsion material through a grey wedge and neutral grey dot screen yields a sensitometric wedge print with a rose color dominant or hue that is particularly outspoken in the toe of the wedge print." It is respectfully submitted that this use of the phrase --neutral grey dot screen-- of Janssens does not disclose or suggest that a neutral screen should be defined as part of a process for generating a continuously variable screening tool. Additionally, Harrington provides no disclosure or suggestion to include a neutral screen in the static screens of Harrington, or if one were included, how it would be used. Therefore, it is respectfully submitted that the only motivation to combine the cited subject matter of Janssens with the disclosure of Harrington is found in the present application. Therefore, the rejection of **claim 2** is based on impermissible hindsight.

For at least the foregoing reasons, **claim 2**, as well as **claims 3-6** and **10-13**, which depend therefrom, is not anticipated and is not obvious in light of Harrington and Janssens taken alone or in any combination.

Claim 11 was rejected under 35 U.S.C. §103(a) as being unpatentable over Harrington in view of Janssens as applied to **claim 2** and further in view of Samworth. Arguments similar to those submitted in support of **claim 2** are

submitted in support of **claim 11**.

Additionally, in explaining the rejection of **claim 11** the Office Action stipulates that Harrington in view of Janssens fails to teach generating a high frequency dot screen. In this regard, the Office Action relies on Samworth and asserts that Samworth discloses an AM screening gray value threshold detector, where dot area modulation is conducted, and further asserts that this reads on generating a high frequency dot screen. However, it is respectfully submitted that Samworth does not indicate that the Amplitude Modulation (AM) or dot size modulation screening technique referred to in Samworth is at a high frequency. Furthermore, it is respectfully submitted that the Office Action does not suggest a reasonable motivation for combining the amplitude modulating screen of Samworth with the subject matter of Harrington and/or Janssens. The motivation suggested by the Office Action is that such a combination would prevent abrupt transitions in the black and white image. However, as pointed out by the Office Action, Harrington describes its method as providing a continuous variation of patterns (column 4, lines 37-38). In this regard, it is respectfully submitted that Harrington suggests that there are no abrupt transitions. Therefore, it would not be obvious to combine Samworth with Harrington for the reasons suggested by the Office Action.

For at least the foregoing additional reasons, **claim 11** is not anticipated and is not obvious in light of Harrington, Janssens and Samworth taken alone or in any combination.

Telephone Interview

In the interests of advancing this application to issue the Applicant(s) respectfully request that the Examiner telephone the undersigned to discuss the foregoing or any suggestions that the Examiner may have to place the case in condition for allowance.

CONCLUSION

Claims 1-20 remain in the application. The specification has been amended to correct typographical errors. The claims have been amended to correct antecedents, correct typographical errors, and to reflect a preferred claim style. For the reasons detailed above, it is respectfully submitted that the claims are now in condition for allowance. An early indication thereof is respectfully requested.

Respectfully submitted,

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